

Fig. 1A

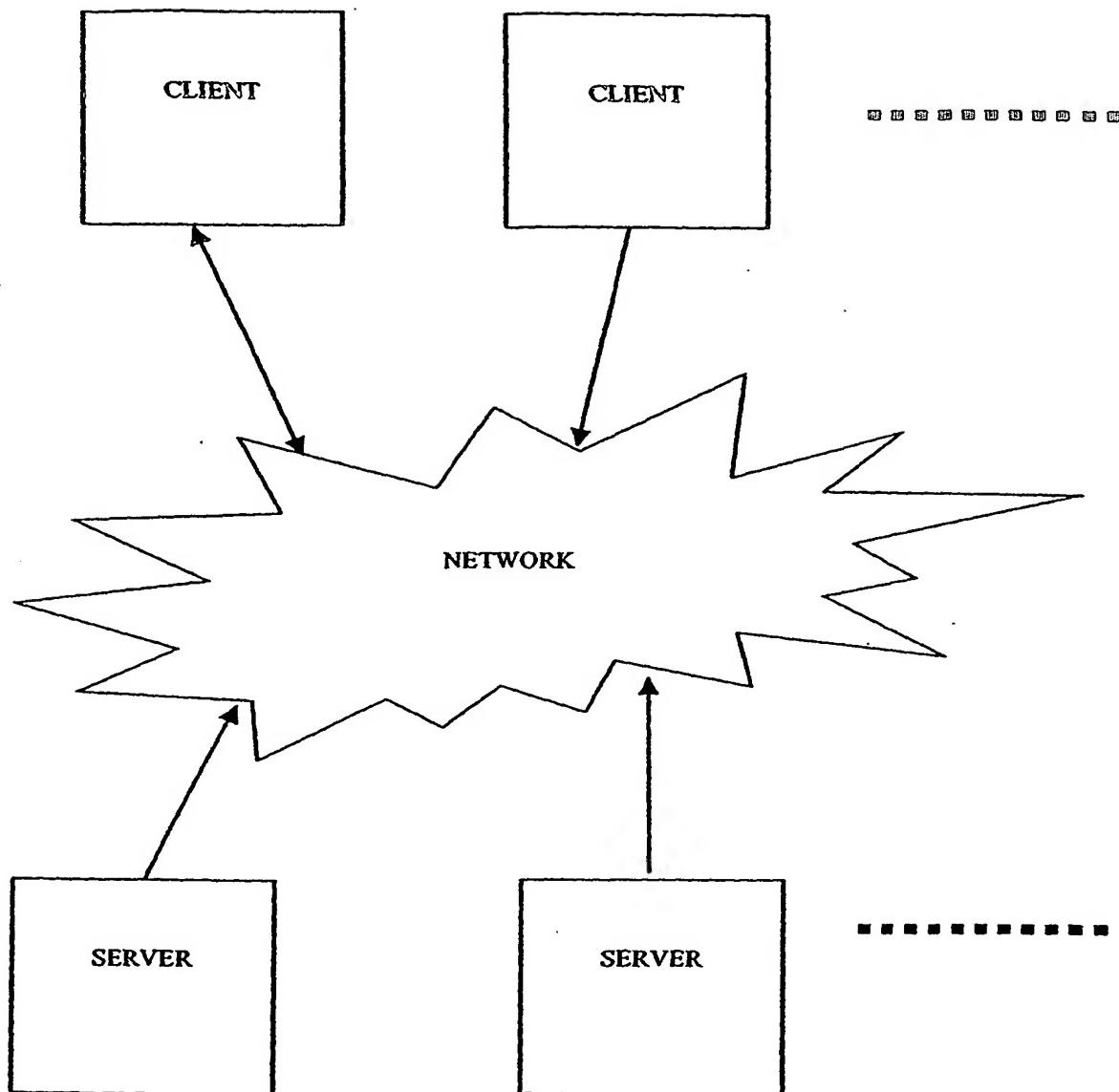


Fig. 1B

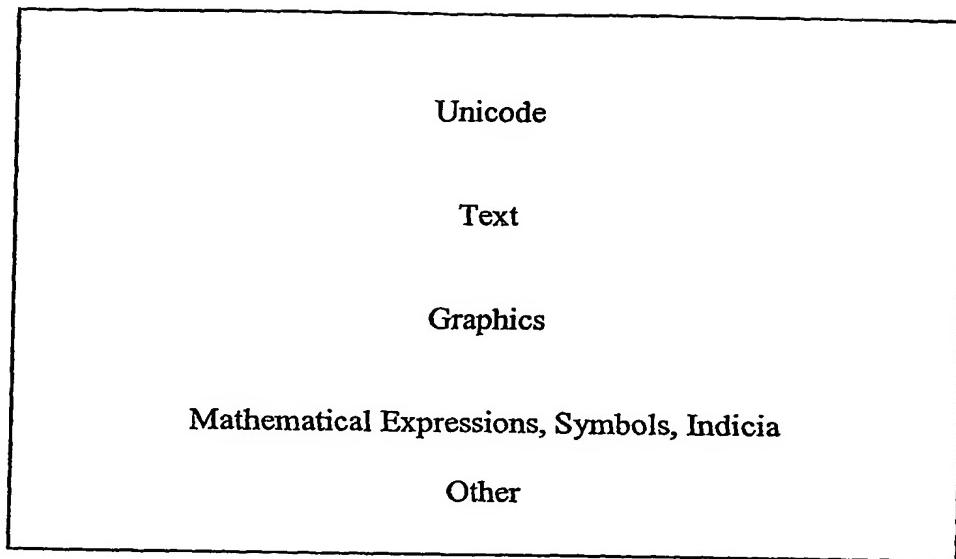
QD Data Structure

FIG. 2

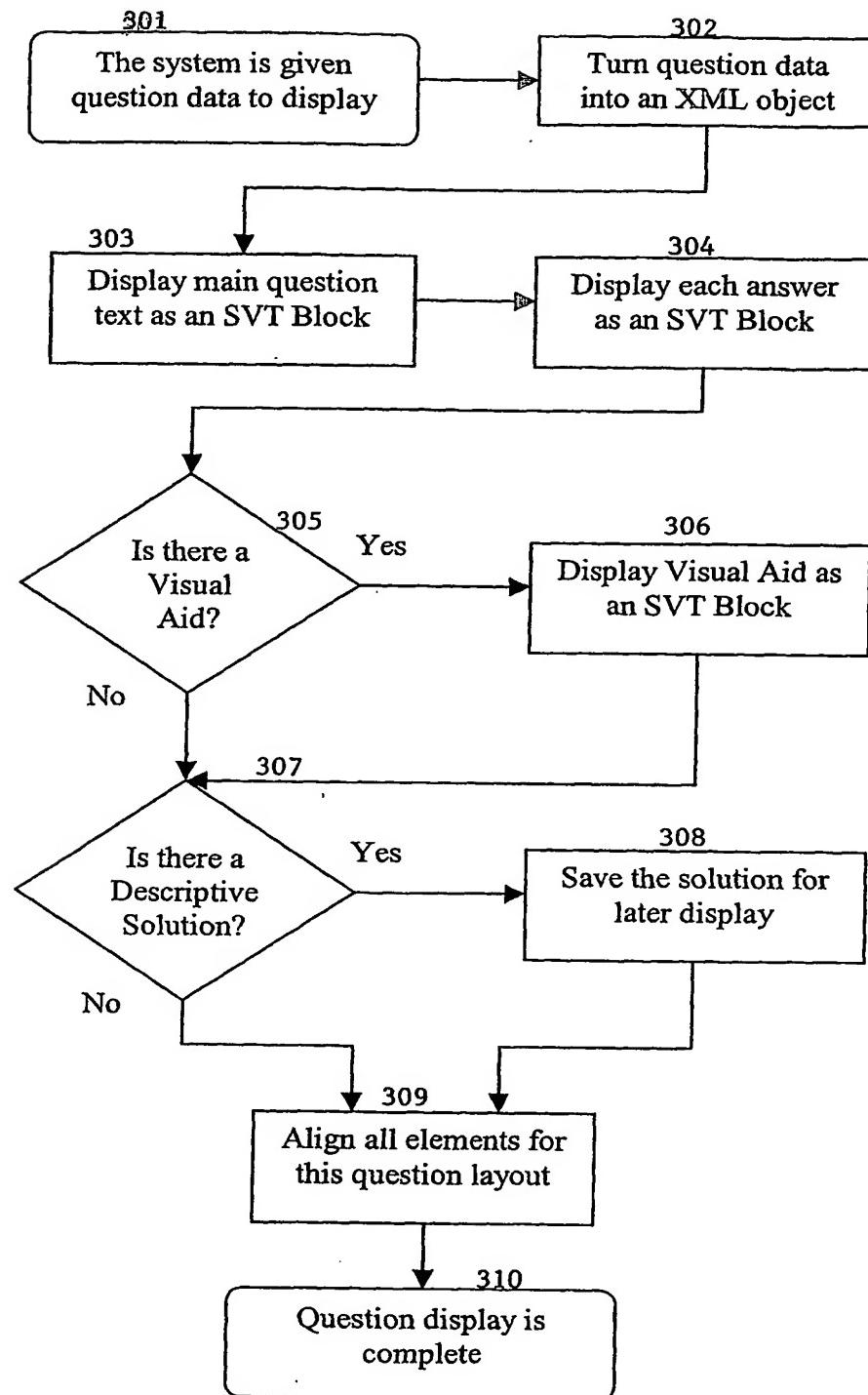
Question Display Flowchart

Fig. 3

Question Display Pseudo-code

```
function parseQuestionXML
    convert raw text to an XML tree
    get question layout style from XML
end parseQuestionXML function

function buildQuestionObjects
    // Sort through branches of question XML.
    for each branch
        if the branch is the main question text
            create a movieclip to contain the text
            call the displaySVTBlock function
        else if the branch is the answer options
            create a movieclip to hold the answers
            for each answer
                create a movieclip to hold the answer
                attach an answer button
                create a movieclip to hold the answer text
                call the displaySVTBlock function
            end for
        else if the branch is some other content block
            if the type of content is visual aid
                if this layout calls for a visual aid
                    create a movieclip to contain the visual aid
                    call the displaySVTBlock function
            else if the type of content is descriptive solution
                save the contents for possible later display
            end if
        end if
    end for
end buildQuestionObjects function

function layoutQuestion
    // Positions are based on the question layout style.
    position the main question text
    position the answer block
    position the answers within the answer block
    position the visual aid, if required
    position any other content block
end layoutQuestion function
```

Fig. 4

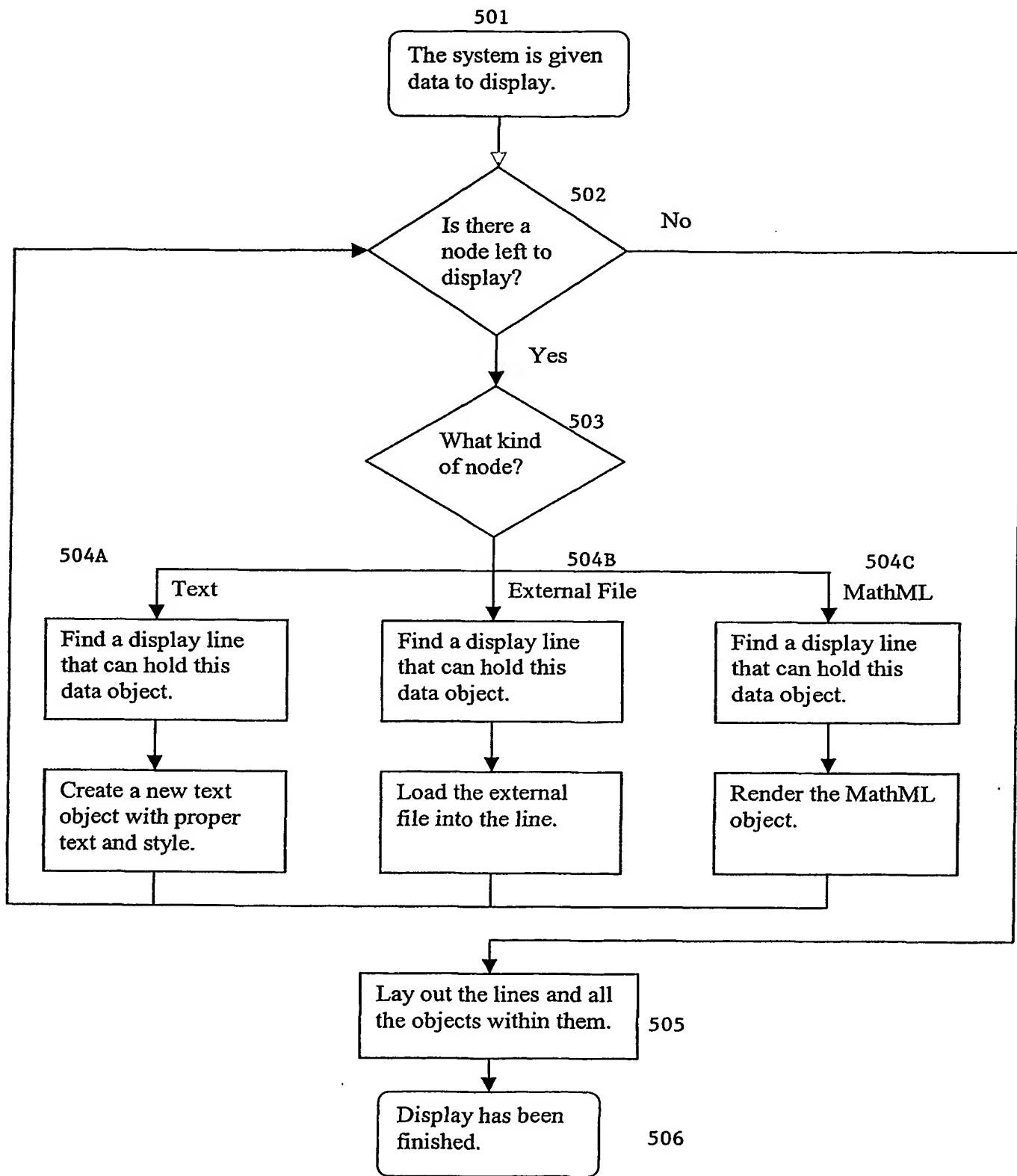
SVT Display Flowchart

Fig. 5

SVT Display Pseudo-code

```

// The displayContentBlock function is the interface to other
code.
// External code would call this function, specifying the xml
data to
// display, the destination to display into, and any non-default
// configuration options.

function displaySVTBlock
    based on      // Initialize the environment of the destination,
                // configuration options.
                // set the environment's width
                // set a default text style
    reference
        for each node in the XML data
            if node is text
                call the displayText function
            else if node is a visual aid file
                call the loadFile function
            else if node is MathML
                call the displayMath function
            end if
        end for

        for each line that has been created in destination
            for each object in line
                gather measurements
            end for
            compute shared baseline and boundaries of
line
            for each object in line
                position the object so
            baselines are aligned
            end for
            align line to other lines and destination
        end for
    end displaySVTBlock

    function displayText
        inherit the default text style
        modify the style as specified for this node
        create an object to hold text within the current line
        while there is text in the node
            remove a word of text
            add the word to the current line of
destination
            if current line has exceeded length
                remove the last line
                mark the line done
                create a new current line
                create an object to hold text
        within the current line
            add the word to the current
line
        end if
    end while
end renderText

    function loadFile
        extract file information from node
        create an object of the file's given dimensions
begin loading the file

        if the object fits in the current line of destination
            place the object into the line
        else
            create a new line
            if the object doesn't fit into the new
empty line
                scale the object to fit the
line
            end if
            place the object into the line
        end if
    end loadFile

    function displayMath
        create an object to render the math node into
        extract MathML data from node
        call the renderMath function

        if the object fits in the current line of destination
            place the object into the line
        else
            create a new line
            if the object doesn't fit into the new
empty line
                scale the object to fit the
line
            end if
            place the object into the line
        end if
    end displayMath

```

Fig. 6

Index	PLANET II Question Number	Subjective Score	Multiple Choice Answer				Sample Duration Test	Answer
			a	b	c	d		
70	Q2N2C	90	354 = <input checked="" type="checkbox"/> lens and 4 ones	<input type="checkbox"/> 5	<input type="checkbox"/> 35	<input type="checkbox"/> 354	<input type="checkbox"/> 30	<input type="checkbox"/> 50
71	C2N2C	95	There were 85 people in the park. 37 of them were males. How many of them were females?	<input type="checkbox"/> 52	<input checked="" type="checkbox"/> 42	<input type="checkbox"/> 48	<input type="checkbox"/> 58	<input type="checkbox"/> 122
			females	females	females	females	females	c
72	C2N2C	85	Mrs. Kim sold 25 eggs this morning. She sold another 50 eggs in the afternoon. She still has 18 eggs left. How many eggs did she have to begin with?	<input type="checkbox"/> 63 eggs	<input checked="" type="checkbox"/> 75 eggs	<input type="checkbox"/> 26 eggs	<input type="checkbox"/> 68 eggs	<input type="checkbox"/> 7 eggs
								a
73	Q2N2C	95	$854 + 354 =$ <input type="checkbox"/>	<input type="checkbox"/> 1,208	<input type="checkbox"/> 1,108	<input checked="" type="checkbox"/> 1,158	<input type="checkbox"/> 500	<input type="checkbox"/> 208
								a
74	I2N2C	100	$5 \times 08 =$ <input type="checkbox"/>	<input type="checkbox"/> 5 + 5	<input type="checkbox"/> 2 + 2	<input checked="" type="checkbox"/> $2 + 2 + 2$	<input type="checkbox"/> 55	<input type="checkbox"/> 22
								c
75	O2N2C	100	$4 \times 088 =$ <input type="checkbox"/>	<input type="checkbox"/> 4	<input type="checkbox"/> 8	<input type="checkbox"/> 12	<input checked="" type="checkbox"/> 6	<input type="checkbox"/> 9
								c
76	O2N2C	100	Grace is 30 years younger than her father. Her brother is 1 year older than Grace. Grace's father is 57 years old. How old is Grace's brother?	<input type="checkbox"/> 68 years old	<input type="checkbox"/> 27 years old	<input type="checkbox"/> 28 years old	<input checked="" type="checkbox"/> 29 years old	<input type="checkbox"/> 28 years old
								a

Fig. 7